

Navigation Database Integrity

AC 20-153, ACCEPTANCE OF DATA PROCESSES AND ASSOCIATED NAVIGATION DATABASES

Presented to: 2005 National Software and
Complex Electronic Hardware
Standardization Conference

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**Federal Aviation
Administration**

Background

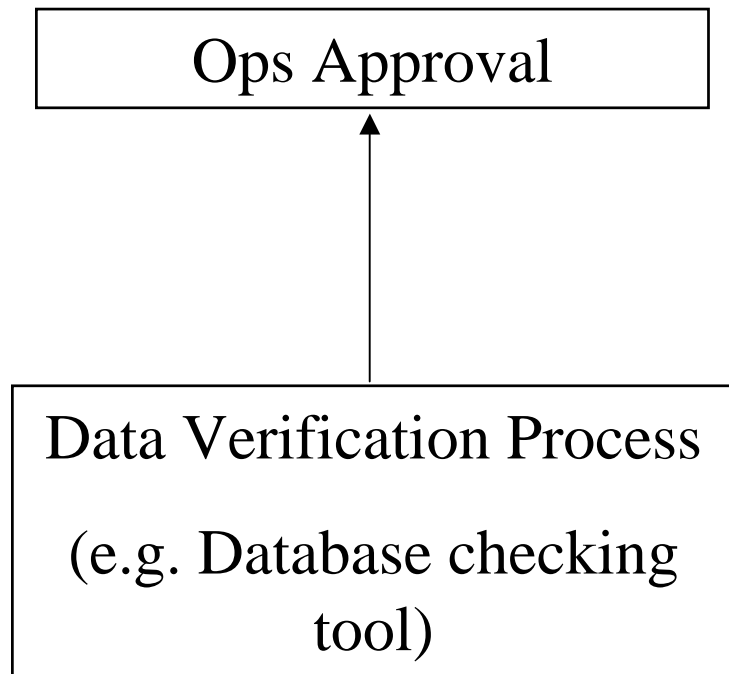
- **P-RNAV requirements defined in JAA TGL-10 (1/11/2000).**
 - “The navigation database updating process shall comply with EUROCAE ED-76 / RTCA DO-200A or equivalent approved procedures.”
- **TGL-10 – 10.6 Database Integrity.**
 - “10.6.1 - The navigation database should be obtained from an approved supplier who has complied with EUROCAE/RTCA document ED-76/DO-200A, Standards for Processing Aeronautical Data.”

Background (continued)

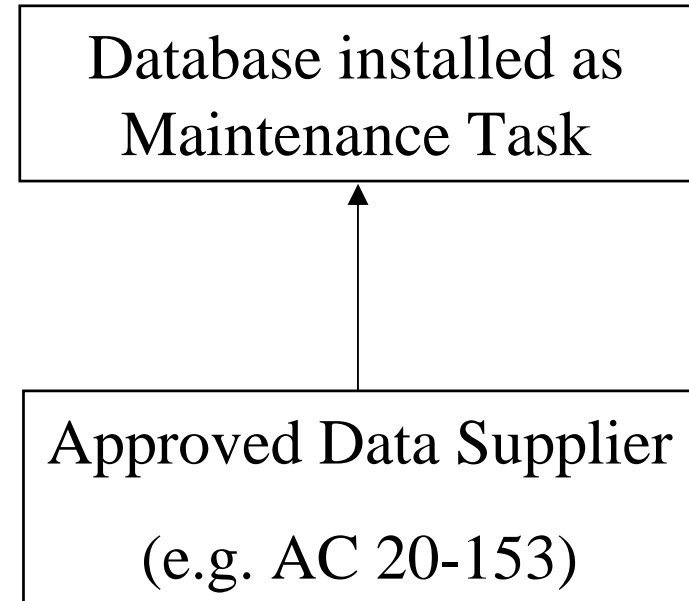
- **AC 90-96A, Approval of U.S. Operators and Aircraft to Operate Under Instrument Flight Rules (IFR) in European Airspace Designated for Basic Area Navigation (B-RNAV) and Precision Area Navigation (P-RNAV) – “Appendix 2, 3.d Database Integrity.”**
 - “(1) The navigation database updating process shall comply with EUROCAE ED-76/RTCA DO-200A, or equivalent approved procedures. **The navigation database should be obtained from an approved supplier** complying with EUROCAE/RTCA document ED-76/DO-200A, Standards for Processing Aeronautical Data. Until such approved suppliers become available, prior to the effective date of the navigation database, as a minimum, the operator must implement navigation database integrity checks...”

Two Different Approval Paths

Data Verification



Approved Supplier



Data Verification Path



Data Verification Process

- **PROs:**
 - Does not require DO-200A compliance
- **CONs:**
 - Initial data verification can be expensive or difficult (to establish gold standard)
 - Each operator has to check the data (even though common data delivered to many operators)
- **Conclusion:**
 - Achievable, but may not be cost effective

Approved Supplier Path



DO-200A Overview



- **Interface Requirements**
 - Document “data quality requirements” between each link in the chain:
 - Accuracy, resolution, assurance level, format, timeliness, completeness, traceability
 - Agree on requirements with previous supplier and with customer
 - In case of previous supplier being a State, requirements defined in ICAO Annexes and separate agreement not necessary
- **Data Process**
 - Document process that ensures customer requirements are met (assuming previous supplier meets requirements)
 - Process places emphasis on error reporting and correction
 - Follow that process

Supplier Approval Overview

- **Data supplier to comply with DO-200A**
 - Document procedures
 - Document data quality requirements
- **FAA to conduct an audit of DO-200A compliance**
 - Utilize avionics and software expertise
 - Initial audit and subsequent audits as appropriate
 - Outcome of successful audit is data supplier approval
- **Evidence of approval is FAA “Letter of Acceptance (LOA)”**
- **2 Types of Data Suppliers/LOAs**
 - Type 1 Data Supplier LOAs are based on generic data requirements between the data supplier and the customer (State data to Type 2 Data Supplier)
 - Type 2 Data Supplier LOAs are based on requirements that ensure compatibility with target hardware to support intended function (Application Integrator)

Letter of Acceptance (LOA)

- **Letter signed by ACO**
- **Applicant defines data quality requirements, compatibility with avionics, if appropriate (Application Integrator only)**
- **Establishes ability to process data consistent with those requirements**
- **Changes to data requirements and process managed as minor/major modifications per terms defined in LOA**

Letter of Acceptance (LOA)

- **PROs:**

- Most flexibility to obtain initial approval & accommodate changes
- Policy harmonized with EASA/JAA

- **CONs:**

- New = requires explanation, training

- **Conclusion:**

- Adaptable
- Requires more definition & cooperation
- Policy already harmonized with EASA/JAA

Current Status

- **AC developed and coordinated through TAOARC/PARC for public consensus**
- **AC internal and public comments disposed**
- **AC reviewed and screened by AIR-100 Legal with no legal issues found**
- **AC 20-153 signed on July 8, 2005**
- **Type 1 Data Supplier audits already conducted**
 - EAG, Jeppesen - Frankfurt, and Lido (EASA)
 - Jeppesen – Denver (FAA)
- **Type 2 Data Supplier Audits being scheduled**

Any Questions?

